Sheet 1-2 Sheets.

Wells, James & Peck.

Forming Bats.

No. 383

Patented Sep. 20, 1837.

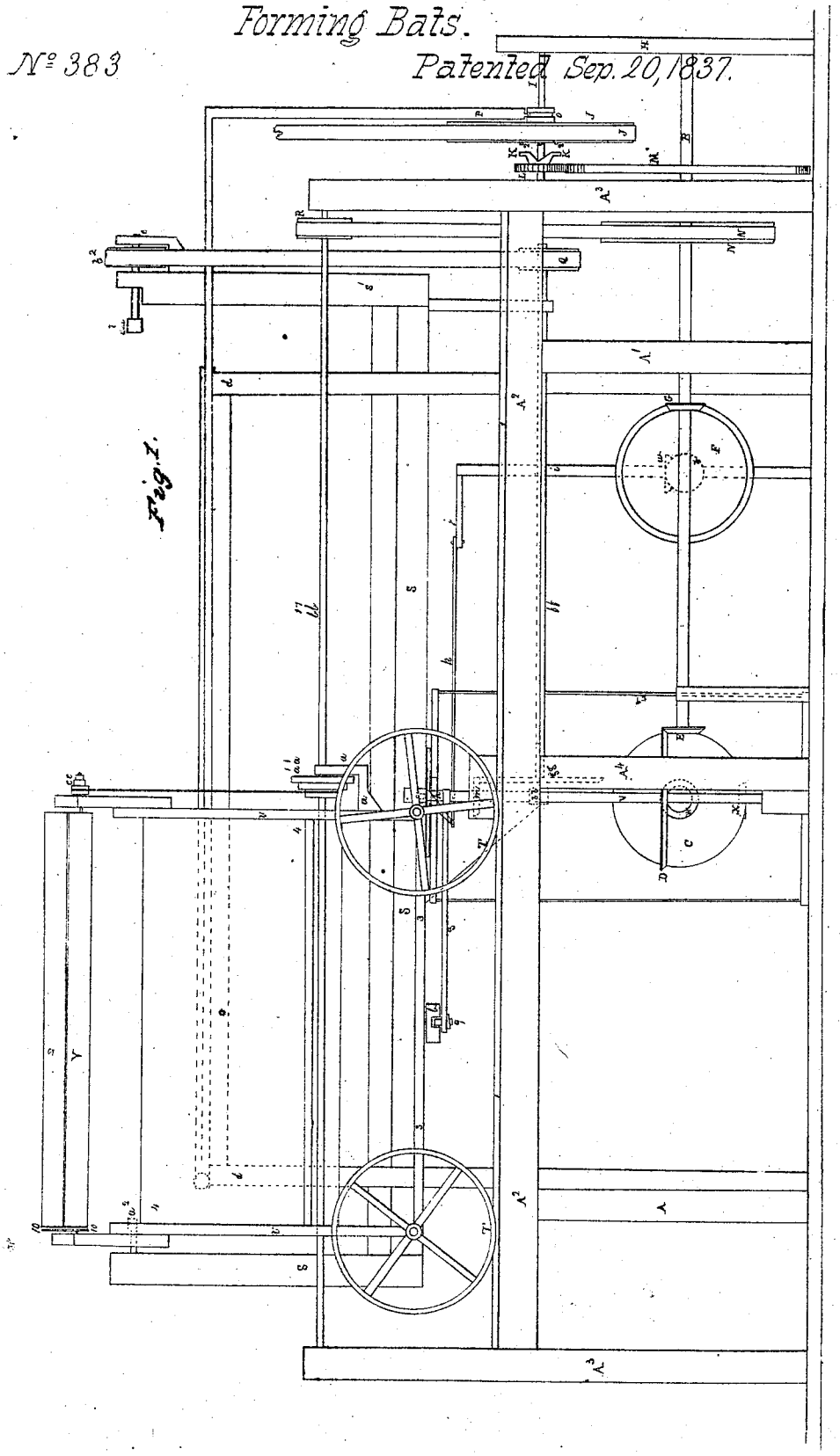


Fig. 1.

Sheet 2-2 Sheets.

Wells, James & Peck.

Forming Balls.

11. No. 383 Patented Sep. 20, 1837.

Fig. 2.

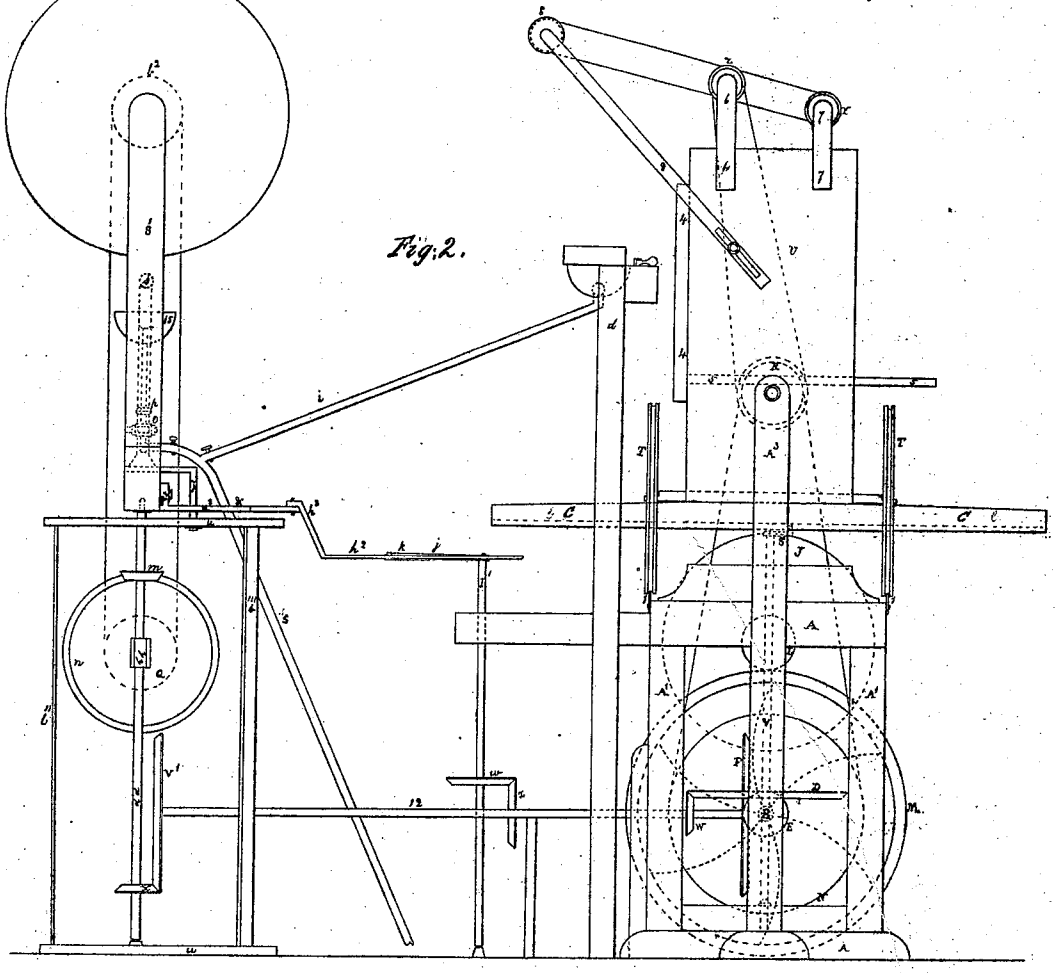
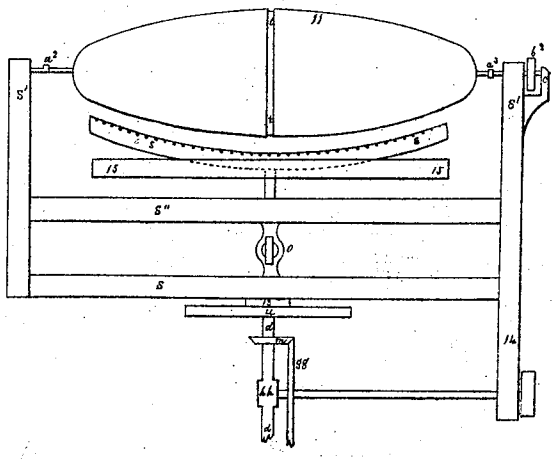


Fig. 3.



UNITED STATES PATENT OFFICE.

HENRY A. WELLS, J. JAMES, AND R. W. PECK, OF BROOKLYN, NEW YORK.

MACHINERY FOR MAKING BODIES TO HATS OF FUR.

Specification of Letters Patent No. 383, dated September 20, 1837.

To all whom it may concern:

Be it known that we, HENRY A. WELLS, JAMES JAMES, and ROBERT W. PECK, all of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in the Machinery for Making Bodies to Hats of Fur from a Delicate Web of Fur, and that the following is a full and accurate description of the construction and manner of operating said improved machine as jointly invented by us.

Figure 1 is a front, and Fig. 2, an end view thereof.

This machine consists of a frame, A, A, A, six feet three inches long, and fourteen inches wide, and nineteen inches high, supported by legs five inches inward from the corners, and marked A′, A′. On the outside of each top plate A^2, A^2 is screwed a piece of plate-iron, 1, 1, the upper edge rising half an inch, which forms a rail-way for the traversing carriage hereafter described; and at each end of the frame, a stud, A^3, A^3, is bolted, extending to the floor, and rising one foot above the top of the frame; and at the pulley, or driving, end, a second stud, marked H, is raised two feet three inches, six and a half inches from the stud on that end to which it is connected at the top, leaving a space of six and a half inches between studs. At seven and a half inches, these studs receive the bearing of the driving shaft, marked I, to which it is secured, by caps, in the usual way; this shaft has on it a driving pulley J, twelve inches in diameter, having on its outside a scored clutch connected with it, which pulley, being loose upon the shaft, is moved easily endwise upon it. Upon the inner face of this pulley are the clutch pins 2, 2, to catch the arms upon the pinion next described. This pinion marked L, has usually sixteen cogs, and is fast upon the shaft, and has bolted to it two arms, marked K, K, extending outward from the center about three inches, in such a manner that when the pulley advances toward them, the pins in the pulley will be brought against the arms, and the pinion and shaft will be carried around with the pulley. On the stud H, on the pulley end of the frame, and eight inches from the floor, are the bosses for the main shaft of the machine, marked B, which at the other end is sustained by a girth connecting the middle legs at the same distance up from the floor. This shaft has, upon its pulley end, a spur cog wheel, marked M, with, say ninety, cogs gearing into the pinion L, and on the other side of the stud, a pulley, ten inches in diameter, marked N, which may be one and a half inches on the face. Ten and a half inches from the pulley is a bevel pinion, marked G, with, say twenty two, cogs; and near the inside bearing in the middle girth, it has a similar pinion of the same number of cogs, and marked E. A carriage is then formed with two axles, with four scored wheels, T, T, ten inches in diameter, and adapted to travel on the rail way before described. These axles are attached to, and connected by, a board, 3, 3, two feet ten inches long. End pieces U, U, are raised from the ends of this board; they may be nineteen inches high, and ten inches wide. These end pieces are supported by a connecting piece of board, 4, 4, fastened on their front edges.

A horizontal board, 5, 5, Fig. 2, is connected with the bottom edge of the supporting board; it projects five inches beyond the back of this board, forming a shelf to support the web to be formed into hat bodies. On each end board, at the top, there are two standards, or arms, 6, 6—7, 7, Fig. 2, to receive the bearings of two rollers, marked Y and Z, which rollers are covered with cloth, and are to carry over the web, so that when the rollers, which are two inches in diameter, are placed upon the standards, or arms, they will be in a line with each other, and may rise from five to seven inches higher than the top of the end board; and other similar rollers, as 8, 8, may be added, if thought necessary, to carry over and regulate the web. To the under side of the carriage board, 3, 3, is bolted a piece of hard wood *b*, *b*, three feet long, one and three quarters of an inch wide, and one and a half inch thick, scored, or grooved, on the under side, the groove being half an inch wide, and half an inch deep; the center of this piece is placed at right angles with the board, and midway between its two ends. An upright shaft, V, is placed in the center of the frame, having its step in a girth connecting the middle legs, three inches from the floor and its upper bearing in the middle of the upper girth and being bolted to the plates of the frame on the top; upon this shaft is a bevel wheel, marked D, with, say eighty eight, cogs gearing into the pinion on the end of the main shaft, marked E. On the top of this shaft V, above the bearing, is an arm, *g*,

nineteen inches long. It has a slot through it, five inches long, to allow of the shifting of the pin 9, which pin rises half an inch above the arm, and enters the groove in the piece of hard wood *b*, *b*; the revolution of the shaft V, will then give a vibratory motion to the carriage. Upon the end of the carriage toward the pulley, near the bottom of the end board, U, is a guide, *a*, *a*, which embraces a sliding pulley *a'*, *a'*; this guide may project three inches and a half outward and extend six inches upward, leaving a space between of two inches for the scored, sliding pulley, *a'*, *a'*. A shaft half an inch square, marked *b'*, *b'*, having its bearings in the upright pieces A^3, A^3, at the end of the frame, stands ten and a half inches above the plate 1, 1; this shaft has, on one end, a pulley, R, of three and three quarters inches in diameter, standing immediately over and connected by a band with, the pulley N. This square shaft passes through the sliding pulley *a'*, *a'*, which has three scores, or grooves; the first three inches, and the last four and a half inches in diameter; and it is so fitted as to slide easily on the shaft, and to take its motion from it. The shaft passes through holes in the end boards of the carriage in which holes it plays freely, below the shelf, or bottom, 5, 5. A pulley *c*, *c*, is placed on the end of the roller, Z, or the roller Y, which is to be scored like the sliding pulley, the smallest diameter one and a half inch, and the other to correspond with the sliding pulley. The pulley *c*, *c*, is connected with its corresponding roller by a band, 10, 10, Fig. 1, on the opposite end and with other rollers, if added.

When the pins 2, 2, on the driving pulley J, are brought into contact with the arms K, K, on the pinion, and the machine is caused to operate, the main shaft, B, will thereby receive its motion; the pulley N, will communicate motion to the square shaft *b'*, *b'*, which will set the top rollers Y, Z, in motion; the pinion E, will give motion to the upright shaft V and the pin in the arm *g*, will cause the carriage to traverse to such a distance on the railway as its situation on the arm may determine, which distance may be regulated at pleasure. The carriage being thus caused to pass forward and backward on the railway, the top rollers will continue in motion, as the sliding pulley will be caused to slide on its shaft with the carriage and will always, by means of the guide *a*, *a*, be kept in a vertical line with the pulley on the top roller, which it drives.

The foregoing pieces of machinery complete the motion for traversing of the carriage. But as it is necessary that the cone upon which the web is to be wound, should have a rotary motion, and also be caused to vibrate, the following machinery is added. The conical former, shown separately in Fig. 3, but well known in hat-making machinery, and seen endwise at 11, Fig. 2, is mounted upon a standard in front of the above described machine. The two plates, *u*, *u*, represent the top and bottom of this standard, which may consist of triangular plates of cast-iron measuring fourteen inches on each side, separated by three studs, *b''*, *b'''*, twenty-two inches long, at the respective angles. And in the center of these is an upright shaft, *d*, *d*, having its step in the lower piece, and a bearing in the top piece. This triangular, or other formed frame, is placed in front, and opposite to the middle of the traversing carriage, or railway, and, say twenty-four inches from it, with one angle and stud directly in a line with the upright shaft V, in the transverse frame, as shown in Fig. 2, in the end view; this stud, *b'''*, has in it the bearing of a pinion shaft, 12, which has its other bearing on the middle leg, A, L, of the railway frame. On this shaft is a pinion, marked W, with, say twenty-two cogs, gearing into the large wheel, D, on the upright shaft, V, of the rail-way frame; and on the other end it has a bevel wheel, marked V', with, say seventy-five cogs gearing into the lower pinion, X, of the shaft in the triangular frame, and having, say twenty, teeth. A vibrating frame is formed to sustain the conical former, which is shown separately in Fig. 3. The lower piece of this frame is marked S, and may be three inches square and five feet long; this piece of wood has a hole in the center to receive the top of the upright shaft *d*, *d*, a small distance above the triangular piece of casting, *u*, having a washer, 13, three inches in diameter between the wood and the iron on which it vibrates. Upon each end of this piece of wood, upright pieces of wood are raised, marked S', and connected by a girth, S'', at three and a half inches up from the bed piece; above which the uprights, S', rise sixteen inches; and the one of them has an iron bearing, marked a^2, (Figs. 1 and 3) to receive the shaft of the cone, and having the bearing for said shaft open at top to admit the cone shaft to be taken away, and a new one substituted. This bearing receives the shaft of the cone fourteen inches up from the girth; at the same distance from the girth, the upright on the pulley end has a pulley, marked b^2, with its bearing resting in the upright piece, and sustained at the other by a stand projecting outward, marked *c*, (Figs. 1 and 3,) with a pulley, b^2, say four inches in diameter, fastened on the shaft which it carries. The inside end of this shaft, has a square socket at a^3, which receives, and turns the cone shaft, the upright S' serving as a collar in which the shaft of the pulley b^2 revolves; the upright piece on this end also (14) extends downward from the bed piece seven inches, and receives the shaft, marked

f, f, which communicates motion to the pulley last described; this shaft has a pulley, marked Q, of the same size, and in a line with the upper pulley; and on the other end, a cog-wheel, marked g', g', with, say seventy-five cogs gearing into the pinion, marked m, on the top of the upright shaft; the bearing sustaining this shaft on the other end is in a thimble clasping the upright and resting on a shoulder turned upon the shaft; this thimble marked h, h, Figs. 2 and 3, is caused to turn with the vibrating carriage by a brace connected with the thimble, and extending toward the other end of the vibrating frame.

By connecting the two pulleys with a band the cone when entered in place will have a rotary motion; but, as this frame must also have a vibrating motion, so as to properly distribute the web, a third upright shaft, marked I′, is placed, say sixteen inches from the traverse frame, and nineteen inches from the pulley end; the step is screwed to the floor, and the upper bearing projects forward from the plate of the railway; this shaft has on it a miter wheel, marked w, say with thirty cogs, and is connected with the main shaft by a horizontal shaft having on the front end a match miter wheel, and on the other a bevel wheel, marked F, Fig. 2, with say eighty-eight cogs gearing into the pinion described first on the main shaft. The upright rises above the upper bearing three and a half inches, and has an arm, marked j, nine and a half inches long, and slotted, say five inches, forming a crank. To the back side of the vibrating frame, an iron arm r^2, r^2, is bolted, to communicate the vibratory motion to the frame, the joint piece p^2, p^3, connecting it with crank arm j. The connecting pin h^2, h^3, is bent downward, say two and a half inches, as seen at h^3, to clear the piece u, already described, when it is again turned horizontally lying level with the crank this horizontal part has six or eight holes by which it is connected by a stud or pin k to the crank j, through the slit, and by a proper arrangement of this pitman any desirable vibrating motion is obtained, suitable to the cone to be covered. But as it is of great importance that steam should be applied while the bodies are being formed on the cone, a sufficient quantity should be taken from a boiler and conducted through a pipe placed close by the back stud of the triangular frame, which pipe turning over the center of the upright enters the lower end of a cock marked O, which rests on a stand marked Z, bolted to the top triangular piece and projecting over the bed piece of the vibrating frame where it is made circular and sustains the cock and a pipe which passes from its upper end up through the girth, where it is connected with a tin tube s, s, made slightly circular to conform to the shape of the cones, this pipe has a joint marked p above the cock and below the girth to which the top piece is screwed, above which it enters the said bent tin pipe which is perforated with small holes and is formed slightly circular and may be wound with cloth to prevent a too great action of steam upon the web; the cones are made of tin of the shape and size desired for the bodies, and they are covered with woolen cloth, with a score t, t, in the middle for the convenience of cutting the bodies apart; it is formed on a half inch shaft made to fit the socket at the pulley end, and a bearing to fit the other end, and for the convenience of carrying off the condensed water a tin trough 15 15, may be placed under the tin tube and the water carried to a pail by a leaden pipe; similar pipes and conveniences must be brought under the cone where the hardening process is going on, for the introduction of steam to the bodies while the hardening is being done.

All those pipes through which the steam is brought must have stop cocks in them to regulate the steam. And for the more perfect explanation of our said machine we have hereunto annexed two sheets of drawings representing the several parts of our machine distinguished from each other by letters of reference.

The above machinery combined and brought to operate as above set forth is our joint invention and the result of many laborious and expensive experiments.

We do not claim as our invention any of the parts of said machines or machinery or motions separately and independently of their connection in the machinery and the combinations herein described, but

We do claim as our invention and improvement and as new and useful—

The above arrangement and combination of the parts of said machinery in manner as above described or in any other manner substantially the same, which combination consists essentially in the producing the transverse vibratory and rotary motions as one action, so as that by winding upon cones a web of fur and by the application at the same time of steam, in manner above described, and connected with the other operations provided for by said machinery to form and harden a hat body, and prepare the same for the sizing operation in a manner much easier, better and more expeditious and cheaper than has been heretofore done in any other way.

HENRY A. WELLS.
JAMES JAMES.
ROBT. W. PECK.

Witnesses:
W. ROCKWELL,
CHAS. HARDY.